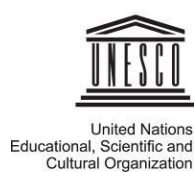


# REPORT ON INDIAN OCEAN SANDWATCH WORKSHOP

## 4-8 October 2010

### Seychelles

Prepared by Gillian Cambers and Paul Diamond, December 2010



## List of Contents

1.	Executive Summary.....	2
2.	Introduction.....	3
3.	Workshop Activities.....	3
3.1	Workshop Objectives.....	3
3.2	Workshop Programme.....	4
3.3	Workshop Participants.....	4
3.4	Workshop Venue.....	4
3.5	Workshop Activities.....	4
3.5.1	Introductory Activities (Day 1).....	4
3.5.2	Sandwatch Training (Days 1-3).....	6
3.5.3	Panel Discussion on Experiences with integrating Sandwatch into the School Curriculum (Day 4).....	7
3.5.4	Sandwatch Projects (Day 4).....	9
3.5.5	Sandwatch Database (Day 4).....	9
3.5.6	Future Sandwatch Planning (Day 4).....	10
3.5.7	Workshop Closing (Day 4).....	11
3.5.8	Workshop Evaluation (Day 4).....	11
3.5.9	Conclusion.....	11
	Annex 1 Workshop Programme.....	13
	Annex 2 Participants List.....	16
	Annex 3 Article from Seychelles Nation, 6 October 2010.....	19
	Annex 4 Photographs of Workshop Participants practising Sandwatch Techniques and other Workshop Activities.....	20
	Annex 5 Articles prepared by Workshop Participants.....	24
	Annex 6 Future Sandwatch Planning.....	26
	Annex 7 Workshop Evaluation.....	29

## Executive Summary

Sandwatch seeks to change the lifestyle and habits of children, youth and adults on a community wide basis, to adapt to climate change by building ecosystem resilience, and to develop awareness of the fragile nature of the marine and coastal environment and the need to use it wisely.

Sandwatch was conceptualised at a workshop in Trinidad and Tobago in 1998, and has since expanded worldwide. In 2009, and with the support of the Government of Denmark, the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Sandwatch Foundation, the Sandwatch initiative embarked on a new phase of expansion with three main objectives to (1) revise the Sandwatch manual to include climate change adaptation; (2) expand Sandwatch into the Indian Ocean region; and (3) design, test and establish a web-based Sandwatch database. This report focuses on the second objective and presents the activities and results of an Indian Ocean Sandwatch Workshop, held in Seychelles 4-8 October 2010, with the support of the Seychelles Ministry of Education, Employment and Human Resource Development.

Participants from 12 countries attended the workshop, and 16 of the 25 participants were from the Indian Ocean region. Participants represented a mix of persons new to Sandwatch and experienced practitioners. After an opening ceremony, the workshop started with a series of discussions on climate change. The main part of the workshop involved presentation and practice on the beach of the various Sandwatch activities documented in the new Sandwatch manual: Adapting to climate change and educating for sustainable development. A half-day session describing and demonstrating various forms of Sandwatch networking was also conducted. Designing Sandwatch projects was the focus of another session.

Experiences with integrating Sandwatch into the school curriculum in the Cook Islands, Dominican Republic, Grenada and Dominican Republic were discussed. These experiences included formal and informal approaches. It was generally agreed that integrating Sandwatch into the curriculum is the way to ensure Sandwatch is sustainable in the long term.

The prototype Sandwatch database was introduced to participants. This will provide a central repository and secure storage for the data collected by Sandwatch groups and is expected to be launched in 2012. It will make the information collected available to a wider audience and will allow for comparisons of data trends for beaches in different geographical areas. This will provide a unique source of information for monitoring how climate change is affecting beaches around the world. There was an active discussion about the viewing of sensitive types of data by outside users.

Planning future national Sandwatch activities was the focus of the final day of the workshop. Countries new and relatively new to Sandwatch planned to share information about Sandwatch with other government stakeholders, conduct training sessions for teachers and other trainers, start Sandwatch in selected schools and environmental clubs on a pilot project basis, and approach the private sector and other potential funders for assistance with Sandwatch. Countries with previous experience in Sandwatch planned individual activities dependent on their particular situations. These activities included: introduce the new manual to existing Sandwatch groups, investigate ways to include Sandwatch in the curriculum, start Sandwatch clubs in schools, establish Sandwatch committees, and expand Sandwatch to primary schools.

Based on an evaluation conducted by participants, the workshop was successful in achieving its objectives, namely to launch Sandwatch in the Indian Ocean region, re-invigorate Sandwatch in Seychelles; form a group of Sandwatch trainers, skilled in the revised Sandwatch approach that incorporates climate change adaptation and resilience building; and introduce and discuss the prototype Sandwatch database. Following the workshop, the Sandwatch Foundation will follow up with workshop participants regarding the implementation of their planned activities.

## **2. INTRODUCTION**

Sandwatch seeks to change the lifestyle and habits of children, youth and adults on a community wide basis, to adapt to climate change by building ecosystem resilience, and to develop awareness of the fragile nature of the marine and coastal environment and the need to use it wisely.

Sandwatch was conceptualised at a workshop in 1998, and formally started in 2001 with a training workshop in St. Lucia. Since then it has expanded worldwide, although the Caribbean remains the region where Sandwatch is strongest, with vibrant country-wide Sandwatch programmes ongoing in four countries (Grenada, Dominican Republic, Puerto Rico and Trinidad & Tobago) and active Sandwatch programmes led by individuals in a further six Caribbean island countries. In 2007 the Sandwatch approach was expanded to include climate change resilience building.

In 2009, with the support of the Government of Denmark, United Nations Educational, Scientific and Cultural organization (UNESCO) and the Sandwatch Foundation, the Sandwatch initiative embarked on a new phase of expansion with three main objectives:

1. Revise the Sandwatch manual to include climate change adaptation;
2. Expand Sandwatch into the Indian Ocean region; and
3. Design, test and establish a web-based Sandwatch database.

Between 2009 and 2010 work has progressed on all three objectives. The Sandwatch manual (2005) was rewritten and tested at a Sandwatch workshop in The Bahamas in June 2009. The manual was then finalised and published in October 2010. An Indian Ocean Sandwatch Workshop was held in Seychelles with the support of UNESCO and the Seychelles Ministry of Education, Employment and Human Resource Development in October 2010. Work has progressed on developing a Sandwatch database that will provide a scientific tool and record of the beach monitoring activities being conducted by Sandwatch groups worldwide. The prototype database was presented and discussed at the Indian Ocean Sandwatch Workshop held in Seychelles in October 2010.

This report presents the activities and results of the Indian Ocean Sandwatch Workshop.

## **3. WORKSHOP ACTIVITIES**

### **3.1 Workshop Objectives**

The objectives of the workshop were:

- To launch Sandwatch in the Indian Ocean region, especially in Comoros, Maldives, Mauritius and Rodrigues;
- To re-invigorate Sandwatch in Seychelles and enhance the skills of existing Sandwatch practitioners in Seychelles;
- To form a group of Sandwatch trainers, skilled in the revised Sandwatch approach that incorporates climate change adaptation and resilience building, and equipped to spread the revised approach nationally and in the Caribbean and Pacific regions;
- To introduce and discuss the prototype Sandwatch database.

### **3.2 Workshop Programme**

The workshop programme is presented at Annex 1. The workshop started with a formal opening and discussions about climate change in the small islands. The main part of the programme involved introduction and training in the Sandwatch monitoring techniques, which were then practised on the nearby beach at Beau Vallon. Sandwatch networking was the focus of one half day session. The workshop wrapped up with a planning session on next steps. On the final (fifth) day of the workshop, participants had the opportunity to attend a prize giving for schools, visit Grand Anse School, take part in a beach tree planting activity, and visit other sites of interest around Mahe.

### **3.3 Workshop Participants**

There were 25 participants from 12 countries:

- Australia (1)
- Canada (1)
- Cook Islands (1)
- Comoros (2)
- Dominican Republic (1)
- Fiji (2)
- France (1)
- Maldives (2)
- Mauritius (3)
- Seychelles (9)
- St. Kitts and Nevis (1)
- Tanzania (1)

Some of the participants were new to Sandwatch while others were experienced Sandwatchers. The list of participants is presented at Annex 2.

### **3.4 Workshop Venue**

The workshop was held at Berjaya Beau Vallon Resort, Beau Vallon, Mahe, Seychelles. Workshop arrangements were coordinated by a team led by Jeanette Larue and the Seychelles Ministry of Education, Employment and Human Resource Development.

### **3.5 Workshop Activities**

#### **3.5.1 Introductory Activities (Day 1)**

##### *Opening Ceremony*

Dr. Marie Reine Hoareau, Secretary-General, Seychelles National Commission for UNESCO gave an address and emphasised the challenging nature of climate change for Small Island Developing States (SIDS). Education is a fundamental part of bringing about the changes needed for adaptation and mitigation. Seychelles joined Sandwatch in 2004 and this triggered climate change education in Seychelles. In Seychelles the natural environment is used as a teaching resource.

Mr. Hans Thulstrup of UNESCO's Small Islands and Indigenous Knowledge Section acknowledged the support provided by the Government of Denmark for this workshop and distributed the new Sandwatch Manual to visitors and workshop participants. Sandwatch is an interesting example of climate change education and connects global phenomena with local changes.

Mr. Bernard Shamlaye, Minister for Culture and Social Services, formally opened the workshop.

The opening ceremony was chaired by Ms. Vanessa Roseline, a student at the University of the Seychelles who had been actively involved in Sandwatch while a student at Anse Boileau Secondary School.

The opening ceremony was attended by the Seychelles media and there was a news clip about the opening on TV on 4 October 2010 and an article in the Seychelles Nation of 6 October 2010 (see Annex 3).

*Panel Discussion on Climate Change in the Pacific, Indian Ocean and Caribbean Regions:  
Morena Rigamoto, Rolph Payet, Gillian Cambers*

Morena Rigamoto described some of the changes already being observed in Fiji. These include variations in rainfall patterns such that water needs can no longer be met in some communities. Other emerging problems included soil salinity and fish poisoning. She noted that innovative approaches were needed including ecosystem based management and multi-sectoral approaches.

Rolph Payet noted that sea level rise was one of the major issues for small islands and that there was a need for a new approach to coastal planning that takes sea level rise into account. He noted that Sandwatch provides an opportunity for young people to play a caretaker role and that a coastal tree planting programme was ongoing in Seychelles. There is an opportunity for the private sector, including the banking and insurance sectors, to play an important role. The hotel sector can play a pivotal role in bringing the private sector on board.

Gillian Cambers emphasised that climate change is still a very new concept for many people and is a very difficult issue since you cannot see it or touch it, it is scientifically complex, takes place over long periods of time and for many people it is just not relevant to their daily lives. It is necessary to focus on changing people's actions rather than their attitudes and that Sandwatch was a good example of how to achieve this.

Discussion items included:

- Need to focus on helping youth take on the challenge of climate change;
- Role of traditional knowledge in national planning;
- Seychelles' new climate strategy, launched at COP 15, included (1) monitoring and research, (2) practical adaptation measures, (3) mitigation, and (4) mainstreaming;
- Alternative energy: Seychelles is undertaking a wind energy study and is also investigating solar energy;
- Likely outcomes from COP 16 in Cancun;
- Long time frame needed for climate change responses.

*Climate Change Education in Seychelles: Jeanette Larue*

Changes are already taking place in Seychelles, e.g. one of the islands was affected by a cyclone two years ago and Seychelles had always considered itself outside of the cyclone zone. There is a need for

small islands to play their part in mitigating climate change even though they only produce small quantities of greenhouse gases. Climate change education must be child centred and participative and there is a need to build teacher capacity to take on climate change in a competent manner. Seychelles has started a rainwater harvesting project in the schools in with support from the United Nations Environment Programme. Sandwatch started in Seychelles in 2004 and was responsible for kick-starting climate change education in Seychelles by linking coastal rehabilitation with climate change. Seychelles is starting to include climate change as a subject in the school curriculum, through social studies at Primary 6 level, and through geography at Level 3. Climate change education needs to be consistent with sustainable development strategies, and islands around the world need to share their resources and experiences.

### *UNESCO's Climate Change Initiative: Hans Thulstrup*

UNESCO's mandate for climate change education originates from several different sources: (1) Article 6 of the United Nations Framework Convention on Climate Change, (2) Decade of Education for Sustainable Development, (3) Chapter 16 of Agenda 21, and (4) the 2009 UNESCO International Seminar on Climate Change Education. These laid the foundation for the launch of UNESCO's climate change education initiative at COP 15 in Copenhagen in 2009. The initiative involves utilising UNESCO's interdisciplinary capacity to build the knowledge base and advance climate change education while maintaining cultural and biological diversity, and addressing ethical and social dimensions of climate change. The focus should be on children and young people. Sandwatch has the potential to link good science with action.

#### 3.5.2 Sandwatch Training (Days 1-3)

An overview of the Sandwatch approach: Monitoring, Analysing, Sharing, Taking action (MAST) was presented. Reference was also made to Decade of Education for Sustainable Development and how Sandwatch contributed to climate change adaptation by making beaches more resilient to climate change.

The various Sandwatch methods documented in the manual were described and discussed, with particular emphasis on how they relate to climate change. Workshop participants then had the opportunity to practice the techniques on the nearby Beau Vallon Beach. Techniques included:

- Observing and recording;
- Measuring: erosion and accretion;
- Beach composition;
- Human activities;
- Beach debris;
- Water quality;
- Wave characteristics;
- Currents;
- Plants and animals.

A selection of photographs illustrating these activities is presented in Annex 4.

A half-day session describing and demonstrating various forms of Sandwatch networking was conducted on the second day of the workshop. This included making a video using Moviemaker, preparation of newsletters and other products using MS Publisher, maximising the power of the media, and

demonstration of a digital microscope. A short video featuring interviews with many of the workshop participants is available at: <http://www.youtube.com/user/SandwatchFoundation#p/a/u/0/U3Eq3ydBZqo>. Participants were advised to provide material for the Sandwatch website ([www.sandwatch.org](http://www.sandwatch.org)). Plans are in progress to completely revise the website early in 2011. At the end of this session, participants worked on short articles for the Sandwatch newsletter and these articles are presented in Annex 5.

### 3.5.3 Panel Discussion on Experiences with integrating Sandwatch into the School Curriculum (Day 4)

#### *Cook Islands*

Since 2006 Sandwatch has been included as one of the Essential Learning Areas (ELA) of the school curriculum in the Cook Islands. This includes:

- History of the beach;
- Mathematics: measuring beach width, collecting data, preparing graphs and conducting analyses;
- Science: ecosystem and natural disasters, water quality;
- Social Science: people, place and environment – changes to the area around the beach;
- Art work – models of the beach.

Schools in the Cook Islands are on a 2 or 3 year cycle, so that Sandwatch features every second or third year. Sandwatch is also integrated into other ELAs. Sandwatch students often visit other government ministries, e.g. those responsible for environment, marine resources and health, to gather further information.

In the Cook Islands, the teachers are seen as the Sandwatch champions and it is essential to retain their support.

The integration of Sandwatch into the curriculum in the Cook Islands came about over a period of several years:

- 2003- After a representative from the Cook Islands participated in a Regional Sandwatch Workshop held in Dominica, Sandwatch was introduced at a Teachers Workshop in Rarotonga;
- 2004-5 The Curriculum Unit conducted a review of the curriculum;
- 2004 – The Curriculum Unit started to coordinate and test Sandwatch;
- 2005 – Sandwatch kits obtained for all the schools;
- 2006 – Sandwatch introduced into the outer islands; an application made for funding a national student conference;
- 2007 - First National Student Conference;
- 2010 – Second National Student Conference.

Remaining challenges include:

- Movement of teachers and changing responsibilities;
- Need for a Sandwatch training refresher course;
- Lack of funding for Sandwatch so the Curriculum Unit often has to piggyback Sandwatch activities onto other activities that are fully funded;
- How to involve youth groups and communities now that the schools are fully on board.



### *Dominican Republic*

Sandwatch started in the Dominican Republic in 2001 after the first Sandwatch Training Workshop in St. Lucia. A national committee was established with representatives of the ministries responsible for education and natural resources, as well as the National Aquarium. Forty teachers were trained in Sandwatch techniques covering 200 km of coastline on the south coast. Training workshops are held every year. At present 75 schools are involved in Sandwatch.

Despite several proposals, Sandwatch is not yet formally included in the curriculum. This will take time and perseverance. However, Sandwatch is integrated into school activities e.g. high school graduates have to complete 60 hours social work as a graduation requirement and Sandwatch activities are often used to fulfil this requirement. In 2010, 25 high school students registered Sandwatch activities for this requirement.

Several innovative approaches have been used such as encouraging private schools (with more resources) to sponsor and assist public schools to undertake Sandwatch activities.

It is very important to meet with other government departments to discuss and apply the results of Sandwatch monitoring.

### *Grenada*

In 2009 Grenada started reforming their curriculum in the hope of creating more ‘rounded’ students taking into account academic education, personal development and technical skills. Having heard about Sandwatch from various sources, in 2010 the UNESCO National Commission in Grenada, with the support of the Ministry of Education and the Curriculum Unit, requested help from the Sandwatch Foundation to conduct a Sandwatch pilot project. A Sandwatch training workshop was conducted in April 2010 involving teachers and educators, as well as representatives from the US Peace Corps and St. Georges University. Since then 12 schools have been implementing Sandwatch. This is seen as a demonstration activity with a longer term view to incorporate Sandwatch into the reformed curriculum.

### *Kiribati*

In 2010 an expression of interest was received by the Sandwatch Foundation from the Environmentally Safe Aggregates Tarawa (ESAT) Project, implemented by the Pacific Islands Applied Geoscience Commission (SOPAC) for the Kiribati Ministry of Fisheries and Marine Resource Development. The ESAT project is working to protect vulnerable beaches in South Tarawa from sand mining by supplying an alternative supply of sand by dredging the lagoon. The project includes a substantial community participation programme and it was here that Sandwatch was seen as having the potential to contribute.

The ESAT project collaborated with the Curriculum Development and Resource Centre (CDRC) of the Ministry of Education who will be undertaking a review of the school curriculum in 2011. A Sandwatch training workshop was held in September 2010 involving teachers and educators as well as staff from the CDRC and the Ministry of Fisheries and Marine Resource Development. Following the workshop, a coordinating committee involving the schools participating in the workshop as well as representatives from the CDRC, Ministry of Fisheries and Marine Resource Development and the ESAT project was established. Plans have been made to start Sandwatch activities in the schools in February 2011. This will provide valuable experiences for the curriculum review.

### *Discussion following the presentations*

- There is a need to integrate Sandwatch topics into the curriculum so that teachers see it as part of their work rather than additional work;
- Besides the schools, there is also a need to involve youth groups, e.g. scouts and guides, environmental clubs, in Sandwatch activities;
- Integration of Sandwatch into teacher training college courses is another possible way of expanding and consolidating Sandwatch;
- Even though the education sector in UNESCO is informed and aware about Sandwatch, areas such as the school curriculum are part of the national mandate;
- There is a need to include other partners in Sandwatch.

#### 3.5.4 Sandwatch Projects (Day 4)

A short presentation was given about Sandwatch projects. A Sandwatch project should fulfil one or all of the following:

- Address a particular beach related issue;
- Enhance the beach;
- Build beach resilience and thereby contribute to climate change adaptation.

When designing a Sandwatch project it is important to:

- Define the objective – be as specific as possible;
- List the activities to be undertaken;
- Estimate the time frame;
- Itemise the support needed;
- Prepare an action plan.

After the project is completed, evaluating the results and documenting the lessons learnt is very important for future Sandwatch project activities.

#### 3.5.5 Sandwatch Database (Day 4)

The Sandwatch database was described. This will provide a central repository for the data collected by Sandwatch groups and secure storage for the data. The information collected will be available for viewing by a wider audience and will allow for comparison of data trends for beaches in different geographical areas. This will provide a unique source of information for monitoring how climate change is affecting beaches around the world.

Members of Sandwatch groups will access the database over the Internet through a web browser. The user software will use the Adobe Flash Player that can be freely downloaded and is probably being already used by many Sandwatch practitioners for viewing other Internet sites. This allows the software to function with any current browser and computer and have features that will be responsive and easy to use.

The database is being designed to hold all the information collected for a beach. As well as storing basic descriptive information about a Sandwatch group and their beach, users will be able to upload and store

pictures, beach profiles, weather data, and water quality data. The software will include access to Google Maps. Users will be able to store the coordinates for their beach.

The main discussion items following this presentation were:

- There was a request to include a facility for updating the database offline and uploading at a later time for countries with slow and expensive internet connections.
- Some of the countries represented felt there was a need to hide some of the data. Tourism is a major industry in many countries, and some of the results may be viewed as sensitive for the tourism industry. These concerns were directed towards the water quality data in particular, and to a lesser extent towards the beach debris data. Countries expressing this concern included Cook Islands, Dominican Republic and Seychelles.
- Other participants expressed the view that hiding or not entering water quality data for example signalled problems with water quality.
- Other participants said that the database will contribute to worldwide knowledge about beaches and therefore information should not be screened or hidden. It was also pointed out that Sandwatch had an important role to play as an environmental watchdog.
- Other participants pointed to the need to screen people entering data in the Sandwatch database.
- Ownership of the data was another area of discussion and it was emphasised that Sandwatch groups would continue to be the owners of their data.

Overall the participants were happy to see the database project start and they felt that it was a useful tool to record their results and that it could be useful for presenting the results and findings to their in-country authorities.

In answer to the question whether any of the existing Sandwatch groups saved their data, representatives from the Cook Islands, Dominican Republic and Seychelles said that the teachers in the schools will still have their data dating back several years.

### 3.5.6 Future Sandwatch Planning (Day 4)

Workshop participants divided into small groups and worked on planning future actions based on the following guidelines:

- What are your immediate next steps on return home and what do you expect to achieve by the end of 2010
- Sandwatch objectives for 2011
- Specific actions for 2011
- Where do you expect to be by the end of 2011

The detailed results are presented in Annex 6.

In summary the countries new and relatively new to Sandwatch (Comoros, Fiji, Maldives, Mauritius and Rodrigues) planned to share information about Sandwatch with other government stakeholders, conduct training sessions for teachers and other trainers, start Sandwatch in selected schools and environmental clubs on a pilot project basis, and approach the private sector and other potential funders for assistance with Sandwatch.

Countries previously experienced in Sandwatch (Cook Islands, Dominican Republic, Seychelles) planned individual activities dependent on their particular situations. These activities included: introduce the new manual to existing Sandwatch groups, investigate ways to include Sandwatch in the curriculum, start Sandwatch clubs in schools, establish Sandwatch committees, and expand Sandwatch to primary schools.

In addition, participants from the Pacific and Caribbean regions made a proposal to UNESCO and the Sandwatch Foundation to hold a Sandwatch Conference in Fiji in 2011.

#### 3.5.7 Workshop Closing (Day 4)

Jeanette Larue closed the workshop by thanking the teachers present for giving up their time during Seychelles Teachers Week. She emphasised that small islands must work together and she hoped to see all the participants again, perhaps in another setting. When people put their hearts into a cause, then things happen. Finally she thanked everyone for their time and active participation in the workshop.

#### 3.5.8 Workshop Evaluation (Day 4)

At the end of Day 4, participants were asked to itemise: (1) the most useful aspects of the workshop; and (2) areas requiring improvement.

Among the most useful aspects of the workshop were the:

- Interaction with people of different backgrounds from other countries and sharing of knowledge and experiences in establishing Sandwatch in other countries;
- The simple, down-to-earth, practical Sandwatch approach that can be understood and carried out by any non-technical/non-scientific person;
- Practising the monitoring and analysis techniques on the beach;
- Sandwatch database; and
- Proactive and informal way of conducting the workshop.

Several ideas were put forward for improving the arrangements and programmes for future workshops. The full results of the evaluation are presented in Annex 7.

#### 3.5.9 Conclusion

The workshop objectives were achieved, namely to launch Sandwatch in the Indian Ocean region, re-invigorate Sandwatch in Seychelles; form a group of Sandwatch trainers, skilled in the revised Sandwatch approach that incorporates climate change adaptation and resilience building; and introduce and discuss the prototype Sandwatch database. Following the workshop, the Sandwatch Foundation will follow up with workshop participants regarding the implementation of their planned activities.



Workshop participants

## **Annex 1 Workshop Programme**

### **Indian Ocean Sandwatch Workshop October 4-8, 2010 Seychelles**

#### **SUNDAY, 3 OCTOBER 2010**

Participants arrive

#### **MONDAY, 4 OCTOBER 2010: WORKSHOP OPENING, DISCUSSIONS ON CLIMATE CHANGE AND SANDWATCH METHODS**

- 0830 – 0930     **Workshop opening**  
Welcome: Government of Seychelles  
Welcome from Workshop Sponsors, Hans Thulstrup, UNESCO  
Icebreaker/Introductions  
Outline of workshop programme, Gillian Cambers, Sandwatch Foundation
- 0930 – 1030     **Panel Discussion on Climate Change**  
Perspectives on Climate Change in small islands:  
Indian Ocean: Rolph Payet  
Caribbean: Gillian Cambers  
Pacific: Morena Rigamoto
- 1030 - 1100     Coffee break
- 1100 – 1215     **Adaptation to Climate Change in the Seychelles**  
Climate change education in Seychelles: Jeanette Larue  
UNESCO's Initiative on Climate Change: Hans Thulstrup, UNESCO, Paris
- 1215 – 1230     Announcements and housekeeping
- 1230 – 1330     Lunch
- 1330 – 1430     **Introduction to Sandwatch**  
Gillian Cambers and Paul Diamond, Directors, Sandwatch Foundation
- 1430 – 1730     **Sandwatch Monitoring and Analysis 1**  
Background information on Sandwatch methods: Observation and recording: Gillian Cambers  
Field session on beach  
Data analysis and group presentations
- 1800             **Welcome Dinner**

#### **TUESDAY, 5 OCTOBER 2010: SANDWATCH METHODS (2), SANDWATCH NETWORKING**

- 0830 - 1230     **Sandwatch Monitoring and Analysis 2**

Background information on Sandwatch methods: erosion and accretion, waves and currents, beach composition: Gillian Cambers  
Field session on beach  
Data analysis and group presentations

1230 – 1330 Lunch

1330 – 1730 **Sandwatch Networking**  
Background information: Paul Diamond  
Training sessions on Movie Maker  
Training session on using MS Publisher to create a newsletter

**WEDNESDAY, 6 OCTOBER 2010: SANDWATCH METHODS (3), FIELD TRIP**

0830 - 1230 **Sandwatch Monitoring and Analysis 3**  
Background information on Sandwatch methods: human use of the beach, beach debris, water quality, plants and animals: Gillian Cambers  
Field session on beach  
Data analysis and group presentations

1300-1730 Field trip and shopping

**Evening after dinner:** Informal presentations from participants on Sandwatch and other environmental /climate change activities.

**THURSDAY, 7 OCTOBER 2010: SANDWATCH AND THE SCHOOL CURRICULUM, PROJECTS, DATABASE, AND FUTURE PLANNING**

0830 - 0900 **Discussion on Integrating Sandwatch and climate change into the school curriculum**  
Experiences from Cook Islands, Dominican Republic, Grenada, Kiribati, Seychelles  
Discussion

1000 – 1030 **Partnering with Sandwatch: Discussions led by United Nations Development Programme and others**

1030 – 1100 Coffee break

1100 – 1130 **Sandwatch Projects: Taking action**  
Discussion on examples of Sandwatch projects led by Gillian Cambers

1130 – 1230 **Sandwatch database**  
Presentation and discussion on the planned database: Dave Gray

1230 – 1330 Lunch

1330 – 1500 **Planning the way forward**  
Small group discussions and presentations

1500 – 1630 **Closing Ceremony**

**FRIDAY, 8 OCTOBER 2010: SEYCHELLES CLIMATE CHANGE EDUCATION DAY**

Seychelles Climate Change Education Day: Involvement of Seychelles schools  
(Fair/exhibition)

**SATURDAY, 9 OCTOBER 2010**

Participants depart



## Annex 2 Participants List

### Indian Ocean Sandwatch Workshop

Name	Address	Email
<b>Australia</b>		
Gillian Cambers	Sandwatch Foundation 3/203 Nepean Highway, Aspendale, VIC 3195 Australia	G_cambers@hotmail.com
<b>Canada</b>		
Dave Gray	934 Mineville Road, Mineville, NS B2Z 1K1 Canada	saltwind@hfx.eastlink.ca
<b>Cook Islands</b>		
Jane Taurarii	Ministry of Education P.O. Box 97, Rarotonga, Cook Islands	jtaurarii@education.gov.ck
<b>Comoros</b>		
Said Andou Abdou Ahamada	National Commission of UNESCO B.P. 24 Mbeni, Comoros	saidabdou1971@yahoo.fr
Asmine Soid	B.P. 25 Ouzioine, Comoros	asminemkandzile@yahoo.fr
<b>Dominican Republic</b>		
Maria Brito Feliz	Encargada de Proyectos y Coordinadora Nacional de la Red de Escuelas Asociadas a la UNESCO (Red PEA) de la Rep. Dom. Comisión Nacional Dominicana para la UNESCO Calle General Luperón No. 105 Ciudad Colonial, Santo Domingo, Dominican Republic.	Mm_brito_cndu@hotmail.com
<b>Fiji</b>		
Brij Lal	Ministry of Education P.O. Box 3745, Samabula, Suva, Fiji	Brij.lal@govnet.gov.fj lal_gbrij@hotmail.com
Morena Rigamoto	Live and Learn Environmental Education 87 Gordon Street, Suva, Fiji	morena@livelearn.org.fj
<b>France</b>		
Hans Thulstrup	UNESCO, 7 Place de Fontenoy, 757007 Paris, France	h.thulstrup@unesco.org

<b>Maldives</b>		
Ziyad Ali	Haleema House Baa Eydhafushi Maldives	Ziya_aadhu@live.com
Aminath Mohamed	Ministry of Education Ma Evening Rose Male' Maldives	Joo122@hotmail.com joo@edc.edu.mv
<b>Mauritius</b>		
Laura Giappichelli	United Nations Development Programme, Mauritius	Laura.giappichelli@gmail.com
Chiranjiwa Naidoo Paupiah	Albion Fisheries Research Centre, Albion, Petite Riviere, Mauritius	cpaupiah@mail.gov.mu
J. R. Pierre Louis	Southeast Marine Protected Area Port Sud Est, Rodrigues, Mauritius	Rexp102@yahoo.com
<b>Seychelles</b>		
Brenda Andimignon	Department of Environment Belonie Mahe Seychelles	Brenda_anchimignon@hotmail.com*
Terrence Crea	Beau Vallon School Anse Etoile Mahe Seychelles	Terrence.crea@yahoo.com
Shane Emilie	Ministry of Education Foret Noire Mahe Seychelles	shaneemilie@hotmail.com
Elvina Hoarau	Department of Environment Victoria Seychelles	e.hoarau@env.gov.sc
Jean-Claude Hollanda	Belonie Secondary School Las Mamelles Mahe Secyhelles	
Jeanette Larue	Ministry of Environment Mahe Seychelles	Jeanettelarue@hotmail.com
Wendy Noel	English River School Mahe Seychelles	Wendynoel30@yahoo.co.uk
Vanessa Roseline	University of Seychelles Anse Baleine Mahe Seychelles	Vanessa_roseline@hotmail.com

Veronica Souyana	Praslin Secondary School Amitie Praslin, Seychelles	veronicasouyana@gmail.com
<b>St. Kitts and Nevis</b>		
Paul Diamond	Sandwatch Foundation P.O. Box 665 Charlestown, Nevis St. Kitts and Nevis	pdiamond@surfbvi.com
<b>Tanzania</b>		
Anthony Maduekwe	UNESCO Dar es Salaam Plot 127, Mafungo Str. Dar es Salaam Tanzania	a.maduekwe@unesco.org



Mr Thulstrup (left) hands over a copy of the new Sandwatch manual to Mr Shamlaye



Dr Hoareau (left) addressing the opening session of the meeting on Monday

## Seychelles hosts climate change forum

People working to protect the environment in Small Island Developing States (SIDS) like Seychelles are analysing the new Sandwatch manual, which contains a range of materials relating to climate change adaptation.

They are doing so through a workshop – Sandwatch: a combined approach to climate change adaptation and education for sustainable development – which is being held at the Berjaya Beau Vallon Bay Resort.

The Department of Education is holding the forum together with the United Nations Educational, Scientific and Cultural Organisation (Unesco) as part of the Sandwatch programme – which was set up in 1999 to help SIDS deal with the ravages of climate change.

Present at the launch on Monday were Minister for Social Development and Culture Bernard Shamlaye and other high government officials.

Dr Marie-Reine Hoareau, the secretary-general of the Unesco Commission in Seychelles, said when Seychelles joined the programme in 2004 it triggered the country's awareness of the issue.

Sandwatch is an educational process through which students and community members learn and work together. They evaluate the problems and conflicts facing

their beach environments and develop sustainable approaches to address them.

"This programme helps our teachers and school children to better understand their coastal eco-system and its importance to bring about sustainable development," she said.

"By promoting climate change education, schools are also contributing to the skills, knowledge and attitudes required to bring about sustainable development.

"Learning to mitigate and adapt to climate change is also learning skills and attitudes needed for sustainable living."

Dr Hoareau said policies and technology transfer alone are not enough to tackle the problems SIDS are now experiencing around the globe – education remains a fundamental factor in helping to bring about the changes needed to combat climate change.

"Yet in many SIDS, although climate change is considered a pre-occupying issue, the implementation of climate change education remains a challenge," she added.

"We cannot separate climate change education from education for sustainable development, as we all know they are connected and complement each other."

Those attending the workshop come from countries such as Fiji, Mauritius and the Dominican Republic, as well as repre-

sentatives from the Unesco headquarters in Paris and Dar es Salaam, Tanzania.

For four days they will talk about the different environmental and Sandwatch activities they have held in their regions and find out ways to network with other small island states.

One of the organisers, Jeanette Larue, said the delegates will also be looking at beaches and helping to plant trees.

This is the first time Seychelles has held such a Sandwatch meeting, and the Unesco representative from Paris, Hans Thulstrup, said he is pleased to see local government representatives attending the workshop as it

shows the country's commitment to the issue.

He said this is evident through the expertise the country is willing to share with other SIDS.

Ms Larue gave a talk on climate change education in Seychelles and then Dr Rolph Payet, the President's special adviser on the environment, led a panel discussion looking at the perspectives on climate change locally.

Mr Thulstrup handed a copy of the new Sandwatch manual to Mr Shamlaye during the opening ceremony.

The workshop closes on Friday.

## Assembly approves extra spending

Members of the Parti Lepep yesterday unanimously approved extra spending by the government for this year, while the opposition abstained.

The leader of government business Marie-Louise Potter presented the motion to the National Assembly asking it to approve this supplementary estimate to regularise spending of R77,932,949 in excess of the approved budget for the year.

During last week's session, the assembly unanimously agreed that details of the extra spending should be presented to its finance and public accounts committee first.

The principal secretary for finance Ahmed Afif gave these details as his minister Danny Faure is on an overseas mission. The committee's acting chairman Andre Pool was also present at the meeting.

Mrs Potter said the expenses proposed will address budgetary shortfalls in some ministries and in other priority sectors.

She added that the spending is divided into three categories: R58.4 million is to be



#### Annex 4 Photographs of Workshop Participants practising Sandwatch Techniques and other Workshop Activities



Observing and recording



Making a sketch map



Completed sketch map



Measuring wave height



Tracking the longshore current using red dye



Measuring sediment size, shape and sorting



Collecting a water quality sample



Measuring water temperature



Measuring water quality

	Temp °C	Turbidity JTU	pH	Diss Oxygen	Nitrate	Phosphate	Coliform Bacteria
1.	28	40 JTU	7	8ppm	< 5ppm	< 1ppm	< 1ppm
2.	28	0 JTU	8	8ppm	0ppm	0ppm	
3.	28	40	8	4ppm	< 5ppm	1ppm	

Water quality results





Paul Diamond demonstrating a digital microscope



Hans Thulstrup presenting a Sandwatch equipment kit to Ziyad Ali from the Maldives



Jeanette Larue, Director General for Public Education and Community Outreach, Department of Environment, closing the workshop.



Workshop participants planting trees at the beach



## **Annex 5 Articles prepared by Workshop Participants**

### *Article 1*

The capacity building from 4-8 October has been very fruitful. New knowledge and skills were gained to benefit the participants as ambassadors of Sandwatch. As educators and promoters of Sandwatch education, ideas were shared based on the different coastal situations in small islands. Simple procedures were learnt during the workshop thus developing scientific skills such as observing, recording, collecting and analysing data and much more. Moreover whatever we have gained will benefit others also as we go out in the communities and share our knowledge and skills.

Implementing the project will be a challenge to individuals. We have suggested possible pathways for carrying out the Sandwatch project. These include integrating Sandwatch into teaching and learning, organising sensitisation and capacity building sessions with communities, establishing Sandwatch clubs, publishing information through the media, organising conferences, networking with other SIDS, and organising Sandwatch competitions in schools.

### *Tomorrow's Environment by Brij Lal*

Development is part of our lives. Changes will occur and we need to keep up with it. Environmental care will make a big difference. The information on environmental care has to go to the young and the old. The best way is to make this a part of the school curriculum. Environmental education has to be integrated into all subjects, e.g. maths, English, social science, science, home economics and vocational education.

The issues of sea care by boat users, reef care by fishermen and developers, coastal management by locals and industry, beach management by hoteliers and other stakeholders, refuse disposal by companies, hotels and industries, and civic pride by every citizen of the country will contribute greatly to having a better world.

### *My Sandwatch Story by Brenda Andimignon*

I've been participating in the Sandwatch workshop since yesterday. The opening ceremony was graced by the voices of the young Seychellois children in their song 'Dance of Life'. I am pretty sentimental and of course the message they were passing through their songs tapped into my heart while my eyes burned with tears. I am glad to be given the opportunity to participate in the workshop.

So far I've learned what Sandwatch is all about through presentations and I've also learnt some activities that can be conducted through the Sandwatch programme. I am eager to learn more and I've already made up my mind to work with the Wildlife Clubs and get them to embark on Sandwatch programmes next year.

### *Sandwatch Workshop in Seychelles: Our Experience*

Our group was composed of participants from Rodrigues, Maldives, Seychelles, Comoros and Canada. For some participants it was a first time experience, while for others it was a polishing of their Sandwatch training and learning new methods, especially about the issue of climate change. Some describe their experience as being fruitful in regard to the issue of coastal erosion and they are looking forward to sharing their knowledge with the community, students and policy makers. Some have acquired the methods of collecting data to monitor coastal areas which will help them with issues such as coastal

management. Some hope to join the team of Sandwatch leaders to take up the challenge in disseminating the Sandwatch vision and mission to help sensitise not only more students but also members of the community.

The first feeling we had here at Sandwatch is the joy to meet people from various countries with different competencies. Everyone is at ease, expressing ourselves without problems. We felt like being from the same family and fighting for the same causes. We want to bring the principles of sound management of natural resources to our countries, especially relating to the beaches. We understand that good actions to manage beaches can contribute to the development of our countries. Tools learnt at Sandwatch strengthened our commitment to inform and train our community in the wise management of beaches. Finally we would like to thank the organisers, the Sandwatch Foundation and UNESCO for their valuable support.

## Annex 6 Future Sandwatch Planning

<b>Cook Islands</b>	
Immediate next steps 2010:	(Sandwatch has already been included in the Professional Development Plan for Jane Taurarii) Planning for introduction of the new Sandwatch manual to teachers and provision of top-up training.
Objectives and actions for 2011:	Objective is to have all schools in the southern group introduced to the new manual Actions: Set up an equipment register Review achievement standards at determine where to include Sandwatch Include Sandwatch in two workshops, one in Rarotonga and one for the southern islands
<b>Comoros</b>	
Immediate next steps 2010:	Make a report on this workshop to the UNESCO National Commission in Comoros Meet with Ministry of Education and other government stakeholders and discuss Sandwatch; identify Sandwatch partners and sponsors by end 2010
Objectives and actions for 2011:	Objective is to have a formal Sandwatch structure in place involving government agencies ( assuming government agreement ) Actions: Train technicians in government agencies, teachers and others in Sandwatch techniques Develop a beach management programme Sensitise different levels within government agencies about Sandwatch Develop materials such as brochures and posters Involve the public in Sandwatch, utilising the media Conduct pilot Sandwatch activities at selected beaches
<b>Dominican Republic</b>	
Immediate next steps 2010:	Meet with the Secretary General of the UNESCO National Commission to inform her about the workshop Write to the Ministry of Education to inform them about Sandwatch developments

Objectives and actions for 2011:	The main objective and action is to determine how Sandwatch can be included in the curriculum.
<b>Fiji</b>	
Immediate next steps 2010:	<p>Meet with other stakeholders to introduce Sandwatch, scope level of interest and what support might be needed (Ministry of Education and Live and Learn)</p> <p>Meet with curriculum developers to see in which areas Sandwatch can be included (Ministry of Education)</p> <p>Conduct training sessions with teachers (Live and Learn)</p>
Objectives and actions for 2011:	<p>Objective is to start Sandwatch in 20 pilot schools, 5 schools in each of 4 divisions.</p> <p>One of the first actions will be to evaluate 2010 activities to see how to move ahead and what funding is required.</p>
<b>Maldives</b>	
Immediate next steps for 2010:	Include Sandwatch activities in the school activity calendar
Objectives and actions for 2011:	<p>Objective for 2011: Start Sandwatch using the school clubs</p> <p>Activities:</p> <p>A workshop on education for sustainable development practices has already been scheduled for 2011 and funds secured. Sandwatch will be included in this workshop which involved school leaders and top management of schools.</p> <p>Start Sandwatch in the school clubs. The goal is to have one school from each of the seven provinces involved, and a start will be made in Baa Atoll where a Sandwatch workshop was held in 2006.</p> <p>Involve NGOs and communities in Sandwatch.</p>
<b>Mauritius and Rodrigues</b>	
Immediate steps for 2010:	<p>Report on the workshop to their respective organisations</p> <p>Hold one Sandwatch workshop in Mauritius and one in Rodrigues for local stakeholders (workshops will be supported by UNDP)</p>

Objectives and actions for 2011:	<p>Objectives:</p> <p>Create a network of Sandwatch trainers in Mauritius and Rodrigues</p> <p>Conduct an exchange with Seychelles</p> <p>Seek funding support from private sector</p> <p>Actions:</p> <p>Prepare a project document to send to the private sector and other possible sponsors</p> <p>Conduct a workshop for trainers in Mauritius and Rodrigues</p> <p>Train one group of students</p> <p>Launch Sandwatch with full media coverage</p> <p>Conduct an exchange visit with Seychelles</p> <p>Inform senior decision makers about Sandwatch</p>
<b>Seychelles</b>	
Immediate next steps for 2010:	<p>Establish a Sandwatch Committee, chaired by the Environmental Education Unit of the Ministry of Environment that will involve all the participants as well as representatives from other organisations</p> <p>Start Sandwatch Clubs at the schools where they do not yet exist</p> <p>Share information about Sandwatch at an end-of-year exhibition</p>
Objectives and actions for 2011:	<p>Objective for 2011: Most schools to have well established Sandwatch clubs</p> <p>Activities:</p> <p>Hold a sensitisation campaign for schools and other groups to enlist new recruits for Sandwatch</p> <p>Launch Sandwatch in the primary schools</p> <p>Hold a training workshop for teachers new to Sandwatch</p> <p>Design a slogan, logo and website for Seychelles Sandwatch</p> <p>Network with other Sandwatch groups around the world</p> <p>Involve other organisations in Sandwatch, e.g. Ministries responsible for environment, community development and standards, as well as hotels</p> <p>Table an item about Sandwatch at the head teachers meeting with a view to discussing integration into the curriculum</p>

In addition, participants from the Pacific and Caribbean regions made a proposal to UNESCO and the Sandwatch Foundation to hold a Sandwatch Conference in Fiji in 2011

## Annex 7 Workshop Evaluation

Participants were asked to itemise:

1. The most useful aspects of the workshop;
2. Areas requiring improvement.

The most useful aspects of the workshop were:

- Interaction with people of different backgrounds from other countries and sharing of knowledge and experiences in establishing Sandwatch in other countries – helps to understand Sandwatch from different perspectives (13 responses);
- Sandwatch has a simple, down-to-earth, practical approach that can be understood and carried out by any non-technical/non-scientific person; flexible; hands-on beach activities will be very effective with teachers and students; can be implemented with limited resources (8 responses);
- Practice with the monitoring and analysis techniques on the beach – ensured participants fully understood the techniques (8 responses);
- Sandwatch database (5 responses);
- Proactive and informal way of conducting the workshop; informal and interactive and friendly atmosphere; openly sharing views, experiences, successes and constraints; (5 responses);
- Constant active participation through small group work; (4 responses);
- Ways to integrate Sandwatch into our national curriculum; learnt about how to use Sandwatch in the curriculum; panel discussion on Sandwatch in the school curriculum was very helpful as it was clearly seen as a way to make Sandwatch sustainable; (4 responses);
- The facilitators and resources used were very good, including the digital microscope, the equipment kit and the power point presentations; power point presentations were very informative and easy to understand and will be very helpful for training teachers in my country (3 responses);
- Manual with all the details is very informative (2 responses);
- Capacity building for beginners;
- Communication and how to make a video;
- Learnt about climate change;
- Water quality activity especially useful;
- Learning strategies to ensure a positive start to Sandwatch;
- Do not need a lot of equipment to carry out most activities;
- Refreshed my knowledge of the project as a whole;
- Forward planning session – this gave participants the opportunity to set realistic goals;
- Proper steps for carrying out Sandwatch projects.

Areas requiring improvement:

Workshop arrangements:

- Well organised workshop, no need for improvement (2 responses);
- Translators and translated materials for the non-English speakers (2 response);
- Better transport for locals so they can easily get to the workshop and participate in evening activities (2 responses);
- In future workshops it would be better if local participants also stayed at the hotel since then they could participate in evening activities;

- Advice about the type of clothes to wear each day taking into account the planned fieldwork;
- Improved announcements;
- Start the workshop with an interactive discussion about beach issues;
- Larger conference room;
- Workshop should be more green: no plastic water bottles, use a conference room with windows (no artificial light); reduce use of paper and use recycled paper; and tie this into climate change mitigation and the concept of carbon neutrality;

Programme:

- Since many of the participants had laptop computers with them, the Moviemaker session could have been more interactive, with participants making their own movie clips;
- Each country to present a country report on the first day;
- Displays of Sandwatch activities in other countries; small exhibition (2 responses);
- Small groups need to be better organised as some people changed groups leading to an imbalance in numbers;
- Include some more theory for teachers without a scientific background;
- More sessions on how to integrate Sandwatch into the national curriculum;
- More time for practical activities and presentation of findings;

Other suggestions:

- Assist the participating countries in finding funds for their Sandwatch activities (2 responses)
- Involve other countries in the Indian Ocean region;
- Have at least 2 representatives from each country;
- Equipment kits should be sent separately to countries rather than participants carrying them;
- More networking especially circulation of the newsletter.